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RE:
U.S. Appln. S/N 10/612,490
Attorney Docket No. GP-301444
Reply to Examiner's Answer, dated November 22, 2006

FROM:
Cary W. Brooks

DATE:
January 10, 2007

TOTAL NO. OF PAGES INCLUDING COVER: **5**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/612,490

Applicant: Harald Schlag

Filed: July 2, 2003

Title: CONDUCTIVE COMPONENT FOR ELECTROMECHANICAL CELLS AND A METHOD FOR ITS MANUFACTURE

Art Unit: 1745

Examiner: Thomas H. Parsons

Attorney Docket No.: GP-301444

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REPLY TO EXAMINER'S ANSWER

Sir:

This is a Reply to the Examiner's Answer mailed on November 22, 2006. Appellant respectfully requests the Board to review and reverse the Examiner's rejection of claims 1-12 and 22-27 as being unpatentable over Adlhart et al 3,623,913 in view of Lemelson 5,740,941 for the following reasons. Claims 6 and 12 have been cancelled rendering the rejection of claims 6 and 12 moot.

In the Examiner's Answer, the Examiner asserts that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the gold coating of Adlhart et al. with the doped diamond coating of Lemelson because both are concerned with coating an aluminum surface with an anti-corrosive material."

Examiner's Answer, pages 9-10. However, Lemelson does not suggest placing such a coating on a fuel cell bipolar plate. Lemelson suggests that his synthetic diamond coating may be applied to a fuel cell electrode. Lemelson, col. 15, lines 52-57. However, a person skilled in the fuel cell art would recognize that fuel cell electrodes are porous. For example, Adlhart et al discloses that electrodes are porous at col. 4, lines 48-62. The porosity of the fuel cell electrode allows reactant gases to flow into and through the electrodes and to undergo a reaction catalyzed by catalysts contained in the electrode. Thus, in order for the electrode to function, the synthetic diamond coating disclosed by Lemelson would have to be porous if it were placed over the electrode to ensure that the reactant gases could flow through the synthetic diamond coating and into the electrode.

If the synthetic diamond coating over the electrode in Lemelson were not porous, the electrode would be unable to fulfill its intended function. Therefore, the only reference to fuel cells in Lemelson, col.15, lines 52-57, actually teaches away from the proposed combination. Lemelson at best teaches a porous synthetic diamond coating on a fuel cell electrode.

Adlhart et al discloses a bipolar plate constructed of aluminum having a protective coating of gold. Adlhart et al, col. 3, lines 64-73. "The bipolar plates are impervious metal plates, e.g. of gold-coated aluminum which separate adjacent cells . . . ." Adlhart et al, col. 4, lines 66-68. Adlhart et al discloses that the bipolar plates may employ 3 mm thick aluminum coated with a thin gold plate as a suitable protection against attack by the electrolyte. Adlhart et al, col. 6, lines 61-65 and col. 4, lines 38-54.

The proposed substitution of the porous synthetic diamond coating of Lemelson for the gold coating of Adlhart et al would result in a bipolar plate coated with a porous

synthetic diamond coating. Such a porous coating would not protect the bipolar plate in the corrosive environment of a fuel cell which may include hydrochloric acid that would attack the bipolar plate through the porous synthetic diamond coating of Lemelson. Thus, the proposed combination and modification is improper because it would render Adlhart et al unsatisfactory for its intended purpose of providing an impervious protective coating over the bipolar plate.

In his Answer, the Examiner states that "the porous nature of the coating on the electrode appears to be due to the porosity of the electrode material and not the coating itself. There is not teaching or suggestion in Lemelson that the coating is porous." Examiner's Answer, page 10. However, one skilled in the art would know that the fuel cell electrode must be porous, and therefore the coating over the electrode must also be porous, in order for the electrode to function properly. Therefore, Lemelson does teach that the electrode material and the coating are both porous.

Substituting the coating of Lemelson for the fuel cell component coating of Adlhart et al would result in a bipolar plate coated with a porous synthetic doped diamond coating. The bipolar plate would no longer be impervious. Thus, a person skilled in the art would not have to be motivated to make the proposed combination and modification. For these reasons, Appellant maintains that no prima facie case of obviousness has been established. Appellant respectfully requests the Board to reverse the Examiner's rejection of claims 1-12 and 22-27 now in the case.

USSN: 10/612,490
Attorney Docket No.: GP-301444

Respectfully submitted,

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